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Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	GEN Docket No. 90-314
	)	ET Docket No. 92-100
Amendment of the Commission's Rules to Establish New Personal Communications Services	)	

REPLY COMMENTS OF U S WEST, INC.

U S WEST, INC.

Jeffrey S. Bork
Keith G. Galitz

1020 19th Street, N.W.
Suite 700
Washington, D.C. 20036
(303) 740-6409

Its Attorneys

Of Counsel

Laurie Bennett

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TABLE OF CONTENTS

TABLE OF CONTENTS

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U S WEST, Inc. hereby submits its Reply Comments in response to the Commission's *Notice of Proposed Rulemaking*, 7 FCC Rcd. 5676 (1992) (*"NPRM"*), respecting the establishment of new personal communications services ("PCS").

INTRODUCTION AND SUMMARY

The comments of the various concerned industry groups clearly do not reach a level of consensus. What the comments do reflect, however, is the importance of PCS to the future of telecommunications and the need for sustained contributions by many different industries and entities.

Each industry has its own vision of PCS. Cable operators see it as a way of entering the telephone business. Telephone companies see it as a way of freeing their customers from the tether of the wire loop. Cellular companies and Specialized Mobile Radio operators see it as a way of providing a variety of new wireless services. Computer companies see it as a means to allow full wireless connectivity for portable computers. Radio equipment manufacturers see it as a potentially vast business and consumer market. Entrepreneurs see it as a new business opportunity, and interexchange carriers view PCS as a means of entering the nationwide wireless marketplace. PCS is not merely any one of

these — it is *all* of these. It is essential that all of these entities work together to bring the envisioned products and services to American consumers.

While there are deep differences among commenting parties on several issues, there is nevertheless a broad consensus on some issues. To many, the development of standards and common air interfaces is among the highest priorities. There is a consensus that these standards should be developed by industry-based standards groups, with encouragement from the Commission. There is a consensus that PCS authorizations should be freely transferable (although there is not unanimity on how to address the issue of speculators). There is also a consensus that there must be widespread interconnection among PCS systems and a variety of other networks.

Consensus breaks down on which industries should be allowed to be providers of PCS. Each industry tends to tout its own importance and to downplay or oppose the participation of others. For this reason, the Commission may find influential the comments of the Department of Justice ("DOJ"), the National Telecommunications and Information Administration ("NTIA"), and the Commission's own Office of Plans and Policy ("OPP").

These governmental entities strongly emphasize the importance to PCS of building on existing infrastructures, such as the cable television and telephone networks, which offer considerable economies of scope for the integrated offering of PCS services. Because of the importance of multiple sources of PCS infrastructure, they urged the Commission to make both telephone companies and cable television operators eligible for PCS licenses.

DOJ, NTIA, and OPP also expressed concern about the competitive effects of allowing cellular licensees and their affiliated companies to hold PCS licenses in markets where they hold cellular authorizations. If the FCC shares the concern of its sister agencies about one entity holding both cellular and PCS licenses in a given area, U S WEST urges

that the Commission not foreclose cellular carriers from contributing their considerable communications expertise and market experience to PCS. Rather, the Commission should address these competitive concerns by maintaining open eligibility at the application stage and require divestiture of any conflicting cellular holdings prior to initiating PCS service. This arrangement would allow experienced service providers to decide how they can best meet the needs of consumers.

The reply comment cycle affords an opportunity not only to rebut the arguments of others, but also to present a refined and revised viewpoint, informed by the comments of others. Just as the Commission's tentative position may evolve from that stated in the *NPRM* in response to comments, the parties' views may be influenced by the comments of others, particularly in an area as complex, multifaceted, and dynamic as PCS.

U S WEST has reevaluated its position on a number of issues in light of the arguments advanced by others. In particular, U S WEST has revised its recommendations concerning the areas to be used for licensing, and the amount of spectrum needed for unlicensed PCS offerings. While U S WEST continues to believe that a blend of licensing approaches would serve the public interest, persuasive arguments have been made in favor of larger, rather than smaller, service areas. This has persuaded U S WEST that three of the four PCS licenses should be awarded for Major Trading Areas, with only one license to be awarded on the basis of MSAs and RSAs. Moreover, the advocates of unlicensed "User-PCS" have effectively made their case that there will be a very substantial demand for a wide variety of unlicensed applications, warranting an allocation of 40 MHz.

I. DIVERSITY OF SERVICES, COMPETITIVE DELIVERY, SPEED OF DEPLOYMENT AND UNIVERSALITY WILL BEST BE ACHIEVED BY A FLEXIBLE LICENSING SCHEME

The success of PCS depends on a flexible regulatory approach which encourages the prompt creation of a vibrant, competitive market offering a wide diversity of services. As established below, the Commission can best achieve these objectives by authorizing a blend of large and small geographic licensing areas and by imposing minimal height and power restrictions.

A. The Commission Should Authorize Three PCS Licenses by Major Trading Areas and One by MSAs/RSAs

In its November 9 Comments, U S WEST proposed that the Commission issue one block of spectrum on the basis of Major Trading Areas ("MTAs")[1/] and issue three blocks of spectrum on the basis of MSAs/RSAs. A "combination" of geographic licensing areas was supported by a number of commenting parties.[2/] Based on comments filed by other parties and recent developments, U S WEST has modified its position and now urges the Commission to authorize three PCS licenses by MTAs and one license by MSAs/RSAs.

The Commission should reserve at least one spectrum block to both encourage low power, more localized microcell services and enable small businesses with more limited financial resources to participate in the development of PCS. MSAs/RSAs should be used for this spectrum block for the reasons recited in the U S WEST comments. [3/]

1/ There are 47 MTAs. The Commission included Alaska and Hawaii to bring the total to 49 MTAs.

2/ *See, e.g.*, Calcell Wireless Inc. Comments at 16; PowerSpectrum, Inc. ("PowerSpectrum") Comments at 5-6.

3/ U S WEST Comments at 12-15.

In addition, the Commission should use MTAs for the three remaining spectrum blocks. Large service areas, such as MTAs, will (i) reduce the Commission's licensing burdens,[4] (ii) provide larger "home" market (as opposed to "roaming" market) coverage areas, thereby allowing for seamless coverage similar to the cellular consolidations,[5] (iii) encourage a relatively large number of participants,[6] and (iv) accurately reflect the needs of a substantial segment of potential PCS users because MTAs are based on the flow of commerce.[7]

The adoption of MTAs will be beneficial because many of the established potential service providers have the desire and ability to provide wide area service, and the accelerated trend in the cellular and SMR industries is towards large, seamless service areas. In retrospect, U S WEST, based on its cellular experience, believes that large licensing areas, such as MTAs, would have been a much better method for cellular licensing. Indeed, one of the most troubling causes of delay in expanding cellular service has been the need to conduct an extensive RSA licensing process. The industry and the public wanted the service but the need to process hundreds of thousands of applications necessarily delayed service deployment.

In addition, there can be no dispute that the Commission can license 49 MTAs much more expeditiously then would be the case with hundreds of smaller licensing areas covering the United States. The Commission could, by lottery or auction, decide the awardees simultaneously. The Commission would also have the resources to promptly address post-lottery or post-auction petitions. None of these benefits would apply if the

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4/ Qualcomm Incorporated Comments at 3; American Personal Communications ("APC") Comments at 21-25, 35-39; Cellular Communications, Inc. ("CCI") Comments at 16-20.

5/ APC Comments at 21-25, 35-39; Cox Enterprises, Inc. ("Cox") Comments at 12-13.

6/ Cox Comments at 12-13.

7/ CCI Comments at 17.

Commission issues PCS licenses solely for smaller geographic areas such as MSAs/RSAs, LATAs or Basic Trading Areas.

The adoption of three MTA spectrum blocks will create a competitive environment which will stimulate expeditious construction and assure that the best services are offered at the most reasonable prices. In addition, criticisms of the cellular duopoly cause U S WEST to conclude that the public would be better served by three, rather than two, PCS licenses being issued for MTAs.

U S WEST concedes that recent developments lend some support to allocating national licenses. For example, the relationship which has developed between AT&T, the largest interexchange carrier, and McCaw, the largest cellular carrier, makes the establishment of a nationwide, seamless, cellular service much more likely in the immediate future. It is to be expected that a second national, seamless cellular system will follow.

Should the FCC move to adopt a national licensing scheme for one or more of the PCS licenses, U S WEST urges the Commission to do so only if it can adopt procedures which would assure that the best qualified applicants prevail. [8/] In U S WEST's view, the optimum approach would be expedited comparative hearings. [9/] Comparative hearings are

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[8/] U S WEST opposes the suggestion made by MCI that a consortium should be preferred for a national license if it includes a pioneer preference winner. *See* MCI Telecommunications Corporation ("MCI") Comments at 4. Pioneer preferences should only be relevant to a specific individual licensing area, and not to the entire nation, because of the limited scope of the experimentation leading to the grant of pioneer preferences and, since none of the tentative awardees have demonstrated that a nationwide pioneer preference is justified.

[9/] Consistent with its discussion at Section II.A. below, U S WEST submits that if comparative hearings are used to select a national licensee consortium, it would be irrational and contrary to the public interest to preclude or disadvantage participation by existing infrastructure providers. *See* MCI Comments at 17. For similar reasons, U S WEST opposes the imposition of an arbitrary limit on any given entity's percentage participation in a national license as PCN America, Inc. ("Millicom") has urged. *See* Millicom Comments at 7.

appropriate to use in the context of awarding a national license as the number of hearings will necessarily be limited and the Commission will not be comparing incumbent licensees with new applicants.

B. LATA Boundaries are not a Rational Basis for Licensing Radio Services

AT&T and several other parties have suggested that LATA boundaries should be used to determine PCS service areas.[10/] They argue that LATAs should define PCS service areas since LATAs reflect established calling patterns.[11/]

However, LATAs were initially based on the existing landline telephone network as it existed over a decade ago. Consequently, they cannot possibly account for factors unique to mobile services, such as traffic and mobility patterns, as even AT&T, an advocate of LATA licensing, has previously acknowledged:

> LATAs under the Decree are drawn with reference to the technological and economic features of landline local exchange service and the objective of promoting competition among interLATA carriers. The overriding consideration here is that *the technology, economics, customer requirements, and competitive implications of mobile radio services are so different from those of landline services that it would be irrational and contrary to any reasonable interpretation of the Decree or antitrust policies to confine the BOCs' mobile radio systems to the precise LATAs established for landline service.*[12/]

10/ *See, e.g.*, Comments of AT&T, Comcast PCS Communications, Inc. ("Comcast"), Corporate Technology Partners, Teleport Denver Ltd., and Utilities Telecommunications Council.

11/ *See* Comcast Comments at 23; AT&T Comments at 12-13.

12/ *See* AT&T Response to Comments and Objections Relating to the Proposed LATA Configurations at 27-28 (Nov. 23, 1982) (emphasis added). *See also* Cellular Telecommunications Industry Association ("CTIA") Comments at 45, 46; Sprint Comments at 8.

The large number of MFJ waivers granted to the cellular providers further confirms that LATA boundaries bear little relevance to mobile communications. [13/] In fact, a number of proposals are currently pending before the MFJ court to remove LATA restrictions for many wireless services. [14/]

Moreover, the administrative costs associated with using LATA boundaries for PCS service areas would be extremely high. The LATA scheme would have to be tailored for wireless service, much like the process by which the Commission modified the MSA/RSA scheme in the cellular service. [15/] In addition, the MFJ court, rather than the Commission, has jurisdiction over LATA boundaries. Because LATA boundaries are modified often, the Commission would either have to adopt and clarify the changes made by the MFJ court, thereby modifying the authorizations of all PCS licensees, or freeze the LATAs at their current state. [16/]

C. The Commission Should Give Licensees The Flexibility To Utilize Both High And Low Transmitter Powers

U S WEST continues to support the height and power levels set forth in paragraph 116 of the *NPRM,* because those levels will provide PCS licensees with the flexibility needed to both stimulate competition and serve a wide variety of customer needs. [17/] Restricting height and power levels, as suggested by some of the commenting

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13/ CTIA Comments at 47.

14/ *See* Southwestern Bell Corporation ("SWB") Comments at 24.

15/ *See* CTIA Comments at 36-40.

16/ *Id.* at 48.

17/ U S WEST Comments at 11. While U S WEST continues to support flexible power limits for PCS licensees, it recognizes that radio-frequency transmissions must comply with any FCC regulations pertaining to biological exposure. The current ANSI (continued...)

parties, would unnecessarily impede achieving two of the stated goals in this proceeding — "competitive delivery" and "diversity of service."

Other parties also favor the Commission's flexible approach to power and height as it will (i) permit PCS licensees to become a competitive force in the mobile market,[18] (ii) allow market forces (*i.e.,* customers), rather than regulatory forces, to decide which PCS services are needed or warranted, [19] and (iii) result in providing the broadest range of competitive services to the public.[20]

Even the DOJ emphasized that power and antenna height limitations would preclude PCS licensees from offering a wide variety of services.[21] The DOJ position is supported by U S WEST's research which concludes that in a competitive market, the demand for existing wireless services will grow substantially as new services are introduced. [22] If the Commission were to restrict the ability of new service providers to offer differentiated services, the potential demand for wireless services will not be fully realized.

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[17](...continued)
Standard (ANSI/IEEE C95.1-1992) is an appropriate basis for any relevant FCC regulations. U S WEST therefore supports the position of Motorola and GTE that the current ANSI/IEEE Standard for exposure, including the exclusion for low-power devices in uncontrolled environments, be adopted. *See* Motorola, Inc. Comments at 28-33; GTE Corporation Comments at 64-65. This, combined with flexible power limits, will allow licensees to engineer base station transmitters and antennas for the required coverage and grade of service while at the same time complying with the most current standard for biological exposure.

[18] Adelphia Communications Corporation Comments at 20; Associated PCN Company ("Associated PCN") Comments at 5; Time Warner Telecommunications Comments at 13; SWB Comments at 33-35.

[19] North American Telecommunications Association Comments at 9; PowerSpectrum Comments at 9; Telocator Comments at 19-20.

[20] SWB Comments at 33-35; DOJ Comments at 9.

[21] DOJ Comments at 9.

[22] U S WEST Comments at 9-11.

Some commenters argue that Section 7(a) of the Communications Act requires that the Commission allocate spectrum for "new" services only. These parties assert that the Commission accordingly lacks the discretion to license high power PCS services because cellular and other licensees offer high power services.[23/] The basic fallacy in this argument is the assumption that "new" services can only be defined as low power in nature. Many "new" services could also be offered through high power macrocells.[24/] Clearly, some parties are seeking indirectly to have the Commission do what it cannot do directly — prevent PCS licensees from offering cellular-like, SMR-like and satellite-like services. Such a market segmentation approach would be anti-competitive and devoid of any redeeming benefit.

> The Commission's primary objective in this proceeding is to:
>
> encourage significant flexibility in the development of technologies and services, and promote competition in PCS and in telecommunications in general.[25/]

This statement underscores that one of the Commission's goals is to promote the development of new technologies using a broad and flexible regulatory approach. Consistent with this analysis, Section 7(a) of the Communications Act makes clear that the Commission has an obligation "to encourage the provision of new technologies." The Act does not limit itself to "new" services. These objectives will not be met if new PCS entrants are limited in their ability to use high power, macrocell technology. In sum, the Commission has the statutory

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[23/] GTE Comments at 20-22; Cox Comments at 4; BellSouth Corporation Comments at 12-20.

[24/] The innovative high-power messaging services (including both one-way and two-way services) proposed for the 900 MHz "narrowband PCS" spectrum are good examples of this concept.

[25/] *NPRM* at ¶ 12.

power to authorize both high and low power for PCS, and such flexibility is necessary to assure the success of this new service.

II. LECS AND CABLE OPERATORS SHOULD BE EQUALLY ELIGIBLE FOR PCS LICENSES

A. LECs and Cable Operators Are Both Well-Positioned to Construct PCS Based on Existing Infrastructure With Substantial Economies of Scope, and Both Should Be Urged to Participate

There is a substantial body of evidence before the Commission establishing that the efficient, effective and timely deployment of PCS requires use of existing infrastructure. There is also general agreement that the principal forms of existing infrastructure that can be most readily adapted to the requirements of PCS are local exchange telephone networks and cable television distribution systems.[26/]

In this regard, OPP's extensive economic modeling of the economies of scope between PCS and both telephone networks and cable systems is most relevant.[27/] That study establishes that both telephone companies and cable companies are capable of providing significant cost advantages over independent PCS infrastructure development because of economies of scope. The incremental cost functions for deploying PCS using cable and telephone plant are very similar.[28/] In both cases, the savings are most pronounced

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[26/] The Commission has recently observed that cable infrastructure can be readily adapted to interface PCS microcells with copper, fiber, and hybrid copper/fiber cable plant. *Tentative Decision* and *Memorandum Opinion and Order*, Gen. Dkt. No. 90-314, FCC 92-467 (released November 6, 1992).

[27/] David P. Reed, *Putting it All Together: The Cost Structure of Personal Communications Services*, OPP Working Paper 28 at 29-36 (November 1992) ("OPP Paper").

[28/] *Compare* Figure 11, *id.* at 31 , *with* Figure 13, *id.* at 35; *see also* Table 8, *id.* at 43.

at low subscriber penetration levels, because fixed costs are converted to variable costs, but the savings continue even as penetration increases.[29/]

This is important because it means that the per-subscriber cost of PCS deployment at the initial stages, when there are few subscribers, will be considerably lower if cable or telephone plant is used for PCS infrastructure than would be the case if a stand-alone network were to be constructed. It is for this reason that OPP concludes that independent PCS infrastructure development is unlikely to occur:

> In contrast, an independent firm — an entrepreneur or small company that obtains a PCS license but does not own any existing infrastructure in the subscriber loop — probably would not choose to construct a stand-alone PCS network. Results indicate the fixed costs of a PCS network using microcells are high in relation to the fixed costs of providing PCS using existing infrastructure. This cost differential is especially dramatic at the low levels of penetration which are to be expected during the first few years of deployment.[30/]

[29/] *Id.* at 31-32, 34-36, 43. By contrast, integration of PCS and cellular service does not provide this significant initial cost advantage because there is little conversion of fixed to variable costs. *See id.* at 39-40.

[30/] *Id.* at 44. This is consistent with U S WEST's internal research. In a presentation to the Commission at its *en banc* hearing on PCS, U S WEST stated:

> Given the cost and complexity of the infrastructure that will be needed to support PCS in the United States, PCS licensees will need to take advantage of existing networks as a major part of their system infrastructure. . . . To minimize costs, and thereby maximize their ability to meet the demands of customers, licensees will find it beneficial to share infrastructure . . . through use of various in-place public and private networks.
>
> U S WEST has conducted economic modeling of the cost of using various alternative networks for PCS infrastructure support. This analysis showed that a microcell network based on either cable or local exchange carrier infrastructure would likely be able to provide service at a lower investment per subscriber than a digital conventional cellular system. Thus, cable and landline facilities may play an important role in supporting the development of PCS.

(continued...)

OPP acknowledges that there may be other sources of infrastructure for PCS support, such as cellular carriers, public utilities, interexchange carriers, and competitive access providers.[31/] However, none of these alternative suppliers have ubiquitous in-place communications transport facilities that can be shared between PCS and existing services to provide the kind of significant cost savings offered by telephone companies and cable operators. While it is true that telephone and cable plant will require upgrading and adaptation to provide a workable PCS infrastructure, both industries are in the process of planning or deploying facilities upgrades, such as optical fiber distribution networks, that are ideally suited for PCS infrastructure.[32/]

OPP opines that existing coaxial cable would not be suitable for backhaul (transport from base stations back to the switch) because "the tree-and-branch architecture of the existing coaxial cable network would require a complex multiplexing system, or large information bus, for concentrating traffic as well as the installation of two-way amplifiers

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[30/](...continued)

John E. DeFeo, *Personal Communications Services: Definition, Expectations, and Development*, Presentation of U S WEST, Inc. at 12-13 (December 5, 1991).

[31/] OPP Paper at 36-43 (cellular), 44-45 (others).

[32/] For example, many cable television systems will be upgrading their distribution plant to fiber optic media. OPP noted that only 22 out of 10,700 cable systems currently "have planned or built fiber backbone systems into the subscriber loop," but observed that fiber deployment is expected to expand rapidly. *Id.* at 33 n.28. It is U S WEST's understanding that cable operators will have installed some 20,000 miles of fiber plant in 1992 alone, and that fiber will be installed over the next five years in most, if not all, of the major markets where cable systems are rebuilt, as well as in most systems controlled by the fifty largest cable companies. Cable operators have a considerable incentive to upgrade to fiber, due to impending franchise renewals, the need to expand revenue opportunities with additional channels and telecommunications services, and the need to improve performance and reliability by reducing amplifier cascades and power failures. Accordingly, by the 1994-95 time frame, when PCS licenses are actually issued and construction is being planned, the major cable operators will be well positioned to compete in the PCS infrastructure market.

along all trunk lines."[33] Accordingly, OPP suggests that before coaxial-based cable systems can provide PCS infrastructure, they will either have to upgrade to fiber, or use telephone network facilities for backhaul.[34]

U S WEST disputes OPP's viewpoint in this regard. While optical fiber is the technology of choice for PCS distribution over cable networks,[35] there are, nevertheless, alternatives to fiber. In fact, the cable industry has found a number of ways to use coaxial cable for PCS infrastructure. For example, two-way amplification can be used on coaxial cables leading to fiber hubs, together with digital information transfer, as a promising means of providing backhaul from base stations. A cable system may also use its fiber and coaxial plant, with two-way amplification, as a means of transporting two-way RF signals to remote antenna sites by converting to CATV-compatible frequencies. Under this scenario, a single base station could serve multiple antennas.[36] Alternatively, cable systems might use high-frequency dedicated microwave facilities for backhaul.[37] In short, the cable industry does not appear to view coaxial cable television plant as a significant obstacle and has devised a variety of strategies for incrementally adapting their networks for PCS support.

Like cable television networks, local exchange telephone networks will also need upgrading and improvement to accommodate the requirements of PCS infrastructure.

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[33] *Id.* at 35.

[34] *Id.*

[35] *Id.* at 32-33.

[36] Roger Hay, Cable Television Laboratories, *PCS Platform Considerations*, Presentation to Telestrategies conference, "Personal Communications Services, Impact on Future Market Structure," November 17-18, 1992, Washington, D.C.

[37] Mark A. Coblitz, Comcast Corp., *Cable TV and Wireless Services*, Presentation to Telestrategies conference, "Personal Communications Services, Impact on Future Market Structure," November 17-18, 1992, Washington, D.C.

In the telephone network, PCS infrastructure is expected to be based on technologies that are in the process of introduction, such as ISDN, optical fiber, and network intelligence. It is not simply a matter of having enough spare copper wire pairs in the existing plant.[38/]

In reality, local exchange telephone companies and cable television operators will be almost identically situated in their provision of PCS infrastructure. They are better situated than most other potential infrastructure providers because of existing ubiquitous distribution networks. Nevertheless, their existing plant will require considerable development to be able to offer the most economical, efficient, capable, and technically suitable infrastructure support.

Given this fact, the starting point for analysis of PCS license eligibility for local exchange companies and cable operators should be that the two types of providers, which will be similarly situated when PCS is introduced to the consuming public, should be treated alike.[39/] Different treatment must be based on differences relevant to the purposes of the Communications Act.[40/] It is thus instructive to examine some of the ways in which telephone companies and cable operators differ.

- *Competition:*
    - Cable television providers have a virtual monopoly business with no effective broadband competitive alternative. Wireless cable service is in its infancy and has far less capacity than cable operators, and telephone companies are forbidden from providing cable television programming by law.[41/]

38/ *See* OPP Paper at 30-32.

39/ Not only does this make sense for practical and policy reasons, but this is a legal requirement as well. *See Melody Music, Inc. v. FCC*, 345 F.2d 730, 732 (D.C. Cir. 1965).

40/ *Id.* at 733.

41/ Video dial tone has been authorized but is years away from widespread commercial (continued...)

- Telephone companies, with the encouragement of the FCC and many state commissions, are beginning to emerge from their former monopoly dialtone status into a highly competitive environment and cable television's transport services provide an attractive alternative.[42/]

- *Rate regulation:*

  - Cable television companies were, until recently, only subject to rate regulation at the franchise level for basic cable service, while other tiers of service have been exempt from regulation; recent legislation has expanded the scope and nature of rate regulation.

  - Telephone companies are subject to rate regulation (rate of return or price caps) at the federal and state levels for most or all of their services.

- *Regulatory status:*

  - Cable companies are not common carriers subject to the original regulatory policies applicable to telephone companies, although they may be forbidden from discriminating among basic cable service customers, nor are they generally subject to structural or nonstructural separation for non-transport activities.

  - Telephone companies are common carriers subject to federal and state laws and regulations requiring provision of service on demand and prohibiting discrimination and unjust or unreasonable rates. "Unregulated" businesses of telephone companies are subject to structural or nonstructural separation from the telephone business to prevent cross-subsidies.

- *Access to facilities and services:*

  - Cable companies are not required to provide access to their facilities to competitors, enhanced service providers, or others. They are free to deny access or offer impaired access at high prices.

[41/](...continued)
implementation, and is in any event not directly comparable with the programming service offered by cable operators. The Commission's recent action of December 10, 1992 proposing a new local multipoint distribution service will undoubtedly provide added competition to cable television operators. *See FCC News Release*, New Local Multipoint Distribution Service Proposed, CC Docket 92-297 (released December 10, 1992). Again, the proceeding is in its early stages and widespread commercial implementation will not occur in the near future.

[42/] Other alternative sources include competitive access providers and vendors of common carrier and private microwave and private-carrier fiber optic services.

- Telephone companies are subject to a variety of access requirements for interexchange carriers, enhanced service providers, competitive access providers, and other competitors, including equal access, comparably efficient interconnection, and open network architecture.

This comparison makes clear that there are far fewer reasons for concern regarding telephone companies' participation in PCS than there are in the case of cable operators. In fact, the public interest *would be disserved* if the major potential PCS infrastructure providers, telephone companies and cable operators, were not placed on the same footing with regard to PCS licensing eligibility. The consuming public expects to be able to obtain telecommunications services from existing infrastructure providers, especially telephone companies. Precluding the telephone companies from fulfilling this expectation would be a significant limitation on customer choice.

B. If Eligibility Restrictions Based on Cellular Interests Are Adopted, They Should Not Apply at the Application Stage, but Instead Require Divestiture of Disqualified Cellular Interests Before the PCS System Provides Service to the Public

Some parties have argued that holders of cellular licenses, and their affiliated companies, should not be eligible to hold PCS licenses (or interests therein) in the same areas where they provide cellular service. A variety of parties, including the DOJ, [43/] the NTIA, [44/]

[43/] DOJ Comments at 29-30 (advocating that cellular carriers and affiliates be ineligible, with the restriction to be revisited after an initial period, such as four years).

[44/] National Telecommunications Information Agency ("NTIA") Comments at 25-28 (advocating that cellular carriers and affiliates be ineligible, with the restriction to be revisited after three years).

and the FCC's OPP, [45] have argued that the Commission should restrict or limit cellular/PCS cross-holdings.

In the event the Commission finds the arguments of these governmental bodies persuasive,[46] U S WEST urges the Commission to adopt rules that do not foreclose the filing of applications for PCS licenses by those directly or indirectly holding prohibited cellular interests, but instead, conditions any grant of a PCS license on the divestiture of any prohibited cellular interests before commercial PCS service is instituted. As a corollary to this condition, a cellular licensee or affiliate acquiring a PCS license subject to divestiture of the cellular license should be required to turn in the PCS license if the cellular interest is not divested.

The establishment of a divestiture policy would better serve the public interest than a basic application ineligibility policy (assuming any cellular ineligibility policy is warranted at all) because it would allow highly qualified companies with relevant expertise to take steps to enter the PCS business in markets with which they are familiar.[47] Some cellular carriers may believe that PCS is an attractive opportunity in their markets — one that they value highly enough to cause them to be willing to divest their cellular interests.

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[45] OPP Paper at 57-60 (advocating that cellular carriers' and affiliates' eligibility be limited to 10-15 MHz of PCS spectrum). The Small Business Administration ("SBA") also called for restrictions on cellular eligibility for PCS licenses if there are three or fewer licenses awarded. SBA Comments at 22-23 and n.22.

[46] It is noteworthy that these parties' concerns were cellular-specific, and were not limited to cellular systems affiliated with telephone companies. Indeed, these governmental parties specifically supported telephone company eligibility in the event cross-ownership policies regarding cellular operations were complied with. There is clearly no basis for limiting the eligibility of wireline-affiliated cellular carriers, while permitting non-wireline cellular affiliates to hold PCS licenses.

[47] *See* SBA Comments at 22-23.

U S WEST urges the Commission to require divestiture, if at all, no later than the time service is to begin, rather than as a prerequisite to grant. This is because requiring the sale of a valuable operating business on relatively short notice could result in disruption of service to the public and would undoubtedly induce in a rash of cellular system sales at the same time at "forced sale" prices, which would be disruptive to the economics of the cellular industry.

There is ample precedent for allowing a reasonable transition period for divestiture of disqualified holdings. The Commission has routinely granted waivers of its broadcast duopoly and cross-ownership policies to permit a divestiture over a reasonable time period, rather than at the time of an acquisition, to encourage an orderly transition, continue the provision of quality service, and avoid the need for sales at depressed prices.[48/] Moreover, the Commission recently acknowledged that the public interest is served by encouraging existing licensees to hold a license for a potentially competing new service when it waived the television cross-ownership rules to allow television broadcasters to hold High

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48/ *See, e.g., John B. Kenkel, Esq.*, 6 FCC Rcd. 952 (1991); *Vincent J. Curtis, Esq.*, 6 FCC Rcd. 78 (1991); *Roy R. Russo, Esq.*, 5 FCC Rcd. 7735 (1990); *Citadel Communications Co.*, 5 FCC Rcd. 3842 (1990); *Richard E. Wiley, Esq.*, 5 FCC Rcd. 2059 (1990); *Knoxville Channel 8 Ltd. Partnership*, 4 FCC Rcd. 4760 (1989); *Lauren A. Colby, Esq.*, 3 FCC Rcd. 4476 (1988); *Earl R. Stanley, Esq.*, 3 FCC Rcd. 604 (1988); *Channel 64 Joint Venture*, 3 FCC Rcd. 900 (1988); *TVX Broadcast Group, Inc.*, 2 FCC Rcd. 1534 (1987); *Twentieth Holdings Corp.*, 1 FCC Rcd. 1201 (1986); *RCA Corp.*, 60 Rad. Reg. 2d (Pike & Fisher) 563 (1986); *Family Television Corp.*, 59 Rad. Reg. 2d (Pike & Fisher) 1344 (1986); *Metromedia Radio and Television, Inc.*, 102 FCC 2d 1334 (1986), *aff'd sub nom. Health and Medicine Policy Research Group v. FCC*, 807 F.2d 1038 (D.C. Cir. 1986); *Storer Communications, Inc.*, 59 Rad. Reg. 2d (Pike & Fisher) 611 (1985); *Capital Cities Communications, Inc.*, 59 Rad. Reg. 2d (Pike & Fisher) 451 (1985); *Valley Broadcasting Co.*, 58 Rad. Reg. 2d (Pike & Fisher) 945 (1985).

Definition Television licenses subject to later divestiture of their conventional television licenses.[49/]

III. THE COMMISSION SHOULD AWARD BLOCKS OF AT LEAST 25 MHZ OF SPECTRUM FOR LICENSED PCS PROVIDERS

While many commenters support the allocation of 20 MHz for licensed PCS providers, a significant number instead advocated 30 or 40 MHz per licensee. U S WEST and several other commenters[50/] representing a diverse industry group, supported the allocation of 25 MHz.

While there are persuasive reasons for allocating 30 or even 40 MHz for each licensee, the fact remains that the amount of available spectrum is limited, and such allocations would limit the number of competing licensees. As in the cellular rulemaking a decade ago, the Commission must balance the spectrum resources made available to each competitor versus the number of competitors for whom spectrum will be made available. U S WEST addressed this balancing process in its comments by advocating that the Commission allocate 25 MHz for each of four competitors.

As amplified below, allocating a minimum of 25 MHz per licensee is necessary to (i) assure the provision of a high quality PCS service; (ii) accommodate an unevenly distributed customer base; (iii) enable the provision of data and other innovative services; and (iv) facilitate the sharing of spectrum with fixed services. Should PCS licensees be limited

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49/ *Advanced Television Systems*, MM Docket 87-268, *Second Report and Order/Further Notice of Proposed Rulemaking*, 7 FCC Rcd. 3340, 3342-45 (1992), *recon. in part on other grounds, Memorandum Opinion and Order/Third Report and Order/Third Further Notice of Proposed Rulemaking*, 7 FCC Rcd. 6924 (1992).

50/ *See, e.g.*, Comments of Ericsson, Pacific Telesis, Viacom, and Cellular Service, Inc.

to less than 25 MHz, they will be forced to provide less diverse services at a lower quality level than would otherwise be the case.

A. High-Quality PCS Service Levels Will Require at Least 25 MHz for Each Licensed Provider

A number of the comments contain extensive discussions about such important issues as eligibility, demand for services, access technologies, and spectral efficiency. Unfortunately, however, the fundamental need for high-quality service has been largely ignored.

It is widely accepted that PCS requires voice quality equivalent to wireline service, because customers will use PCS in much the same manner as they use wireline telephone service today. The industry is currently working to develop standards that will objectively define the performance requirements for PCS.[51/] The voice compression technologies that will be available for initial PCS deployment in two or three years will very likely require the use of high-bit-rate voice coders (*i.e.*, 24 kb/s or greater) to achieve the specified speech quality level.[52/] In addition to not meeting the requirements for speech quality, low-bit-rate voice coders would introduce significant end-to-end delay — on the order of tens of milliseconds — which would increase costs and reduce quality.[53/] Because PCS is a complement to, and a potential replacement for, wireline telephone service, the delay

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51/ The T1A1.1 sub-working-group of the T1A Committee is developing performance standards. U S WEST supports, and is participating in, this group's efforts.

52/ The current draft of the T1A1.1 standards document includes two key requirements: (1) that the mean opinion score for the PCS voice coder be within 0.5 points of the performance of a 32 kb/s ADPCM coder (CCITT G.726 or G.727) and (2) that the radio link should not introduce more than 4 Quantization Distortion Units. *Personal Communications Performance*, T1A1.1/92-032 R6 (October 15, 1992).

53/ Excessive delay would require the use of echo cancelers, which could add to equipment and network management costs, and reduce mean opinion scores to unacceptable levels.

characteristics of PCS must be comparable to wireline service. Current design practices dictate that this one-way delay contributed by the local loop be less than 6.5 milliseconds. If the Commission expects PCS to fulfill its potential as a service equivalent to wireline telephone service, the spectrum allocation must be sufficient to allow each provider to use high-bit-rate voice coders and at the same time provide sufficient capacity to meet long-term demand at a competitive cost.

An allocation of less than 25 MHz would jeopardize this goal, because too little spectrum would be available at each base station. The advocates of a smaller allocation, such as 20 MHz, typically ignore quality considerations, comparing PCS to digital cellular service or enhanced SMR dispatch service, neither of which have wireline voice quality as a paramount design goal.[54/]

B. Uneven Distribution of PCS Users Will Require More Spectrum than Predicted by Theoretical Deterministic Models

Determining the number of channels needed to support PCS traffic depends on certain assumptions about the users who will be served by a PCS base station, such as the number of users and the average amount of busy-hour traffic per user. In a typical residential area or office environment, it is reasonable to assume a relatively uniform, predictable distribution of users for traffic modeling. Under this deterministic model, a system designer can evenly space base stations with known channel capacity throughout an area of relatively uniform user density, such as a subdivision, to achieve a specified quality of service.[55/] Thus, with a 20 MHz spectrum allocation, the desired 0.99 probability of

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54/ *See, e.g.*, McCaw Cellular Communications, Inc. Comments ("McCaw") at 6-9.

55/ For an example of this model, *see* OPP Paper at 5-7. The OPP Paper assumed a "hypothetical new residential development of 25,600 households, spread out over a square area with 160 homes to a side." *Id.* at 5. For the sake of simplicity, OPP (continued...)